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Christian Gorzelanny

Professor Christian Gorzelanny has been an independent group leader at the *University Medical Center Hamburg-Eppendorf* since 2018. He began his scientific career in Münster and Lyon, where he first came into contact with chitosan in the laboratory of Alain Domard. During his PhD in Münster, he investigated the effects of chitosan on mammalian cells, with a particular focus on human chitinases. He subsequently completed postdoctoral research at the University of Heidelberg, studying the interplay between the coagulation system, pathogens and cancer cells. His current work centers on the molecular interactions between glycosaminoglycans, mammalian chitinases and chitosans in regulating innate immune responses.

Talk: Chitin and chitosan recognition and processing in humans

Mammals, including humans, express a variety of putative chitin receptors, chitinases and chitinase-like proteins. Previous research indicates that these factors cooperate to promote the recognition of chitin-containing pathogens such as fungi. However, the chitin-recognition and processing machinery is not only upregulated during infections but also in sterile chronic inflammatory diseases and cancer, suggesting additional molecular targets beyond chitin or chitosan. Current evidence points to roles in extracellular matrix remodeling, angiogenesis and immune cell activation. In our previous work, we discovered that the human chitinase-like protein chitinase-3-like-1 cooperates with the extracellular matrix component heparan sulfate to facilitate the recognition of chitosan via toll-like receptor 2. Although this molecular mechanism highlights a pathway for pathogen recognition by the innate immune system, similar mechanisms may contribute to the biological activities of chitosan-containing biomaterials that promote wound healing or tissue regeneration.

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